[AIR-Packet Module Specification]

Purpose:
- Encapsulates quantized and entropy-coded data into LC3-like bitstream format
- Manages frame headers, error checksums, payloads

Note: This module was co-developed via GPT-4o-based prompt-driven vibe coding in collaboration with 제현.

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[1] Packet Structure
[HEADER][PAYLOAD][CHECKSUM]

- HEADER (8 bytes)
  - Codec ID (2B): AIRx
  - Frame Index (2B)
  - Config Bits (2B): format, latency mode, flags
  - Payload Length (2B)

- PAYLOAD (variable)
  - Entropy-coded subbands (int8/int16 bins)
  - Can be encrypted (optional)

- CHECKSUM (4 bytes)
  - CRC32 or custom fast XOR sum

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[2] Module Functions
- packet_init(config): Set codec metadata
- packet_frame(input_bins): Wraps entropy data into AIR packet
- packet_checksum(packet): Computes & appends checksum
- packet_parse(raw_packet): Extract header + decode payload

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[3] Integration Points
- Receives data from AIR-Runtime (Stage 6)
- Sends packet to output device / driver / storage buffer
- Compatible with decoder feedback module (future use)

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[4] Notes
- Frame length must not exceed MTU if used for wireless (e.g., 120B BLE)
- Can be extended with encryption, timestamping, sync flags, etc.

Author: 제현
Module: AIR-Packet
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